

**METHODS AND APPARATUS FOR THERMALLY BONDING LUBRICANT
TO A DISK SURFACE WITH USE OF A HEAT SOURCE IN A MAGNETIC HEAD**

ABSTRACT OF THE DISCLOSURE

5 A method of thermally bonding lubricant over a surface of a magnetic disk in a disk drive involves providing a heat source at an air bearing surface (ABS) of a magnetic head; causing the heat source to be energized to produce heat; and causing the magnetic head to be moved across a surface portion of a magnetic disk so that lubricant is thermally bonded over the surface portion from the heat produced by the heat source.

10 Preferably, this lubricant bonding mode of operation is performed on a regular or periodic basis. Alternatively, the mode is activated based on a predetermined environmental condition (e.g. temperature or humidity) or from an external signal. In one example, the heat source is comprised of first and/or second pole pieces of the magnetic head through which an electrical current is passed. In another example, the heat source is comprised of

15 a separate heating element which is formed on or within the magnetic head (which may be the same heating element utilized for thermal-assist writing to the magnetic disk). In yet another example, heat for thermally bonding lubricant is generated by reading data from a data block on the magnetic disk and writing the data back to the data block in a repetitive fashion.